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(54) System and method for anonymous access to the internet

(57) A system and method for enabling an Internet user to anonymously access services offered by Internet content providers. The invention uses a proxy server operated by a proxy with whom the user, as a client of the proxy, has established a line of credit or has deposited funds. The client and proxy have also agreed upon an alias for the client, and the proxy has provided the client an alias account code to use in purchasing over the internet merchandise from Internet content providers. The client uses a browser to access the Internet through the proxy. The proxy server communicates to the Internet, under the alias, all transactions originating with the client; and also receives all transactions directed to the alias and communicates them to the client browser. The proxy examines the transactions for the occurrence of the alias account code provided by the client to purchase merchandise from an Internet content provider, and when finding it, seeks to determine whether the client has sufficient credit or funds for the proxy to guarantee payment for the merchandise. Depending on instructions from the client, the proxy will also receive the physical merchandise and make it available to the client according to the client's instructions.

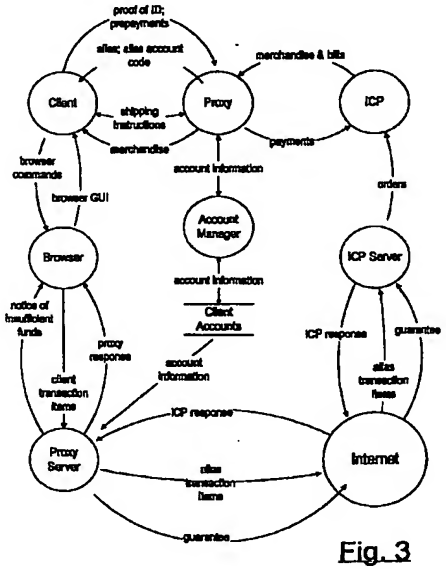

Fig. 3

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Description

[0001] The present invention pertains to accessing the Internet, and more particularly to accessing the Internet anonymously to carry out transactions including making purchases.

[0002] Although communication over the Internet can be encrypted, the Internet is not a secure network. Unencrypted communications can be overheard, and when those communications convey confidential information, there is the potential for harm.

[0003] But regardless of whether a communication is encrypted, the environment at an intended recipient of an Internet communication may not be secure, If an Internet user visits a site on the Internet, there is a chance that the information that the user visited the site will be made available to others or otherwise used by people at the site in ways the user would not approve.

[0004] What is needed is a way for a user to visit a site on the Internet anonymously. But without paying, an Internet user cannot take advantage of all that is offered through an Internet site, such as access to information from a site, or the opportunity to order merchandise through the site. Thus, what is further needed is a means for rendering or ensuring payment over the Internet to the operator of an Internet site in a way that will be accepted by sites on the Internet, without revealing the identity of the user making the payment.

[0005] Accordingly, it is an object of the present invention to provide a means for an Internet user to visit sites on the Internet anonymously, to pay for merchandise made available through those sites anonymously, and to have the operator of an Internet site provide merchandise, services, funds, goods, information, etc., to a user without the operator learning the identity of the user who ordered the merchandise. To meet the above object, the present invention provides a system

[0006] for enabling a client, using an alias, to access merchandise, services, funds, goods, information, etc. over the Internet offered by an Internet content provider (ICP) operating an ICP server, the system comprising: a) a browser hosted by a computer operated by the client, for receiving graphical user interface (GUI) screens, and for communicating transactions indicated by the client, the transactions including information that allows the alias to be associated with the transactions; and b) a proxy server operated by a proxy, responsive to transactions, for ensuring that each transaction is under the alias and for communicating the transactions to the ICP over the Internet, and further responsive to GUI screens directed to the alias, for providing the GUI screens to the browser.

Fig. 1 is a block diagram showing an Internet connectivity architecture according to the present invention;

Fig. 2 is a process flow diagram illustrating the principal interfaces of the present invention; and

Fig. 3 is a data flow diagram illustrating various communications over the Internet, according to the present invention.

[0007] Referring now to Fig. 1, a client user **11** is shown operating a computer **12** executing an Internet browser application (not shown), but connected to a proxy server **18**, instead of directly to an Internet service provider (ISP) to access the Internet. The proxy server **18** is in turn connected to an ISP **15** to gain access to the Internet. (The proxy server **18** may itself be an ISP.) With this indirect connection to the Internet, the client user **11** gains indirect access to an Internet content provider (ICP) server **16**. The proxy server **18** is operated by a proxy **14**.

[0008] Referring now to Fig. 2, according to the present invention, to access sites on the Internet anonymously, the client **11** of the proxy **14**, in a step **31**, connects to the proxy server **18**, providing proof of identification. As will be explained in more detail below, the client will have already established with the proxy a line of credit or will have opened with the proxy an account holding funds, and will have provided other information needed for the proxy to provide its proxy services, also to be described in what follows.

[0009] In connecting to the proxy, the client uses a pre-agreed-upon alias, an alias created when the client first established with the proxy a line of credit or deposited funds with the proxy. In the preferred embodiment, the client will have deposited funds with the proxy, which the client could do anonymously. Alternatively, as indicated above, the client could establish with the proxy a line of credit, which would not be anonymous, however, the proxy could guarantee confidentiality of the database. Because of either an account with funds or a line of credit (e.g., a kind of charge card or credit card account), the client is said here to have a certain amount of purchasing power associated with an alias account having an alias account code. In one aspect of the present invention, the alias account code is a credit card number for a credit card issued by the proxy, or an agent of the proxy. But in all aspects of the present invention, there is an alias account code for a client account having a certain amount of purchasing power associated with an alias account maintained for the client by the proxy, or an agent of the proxy.

[0010] The client computer and proxy server can communicate over many different kinds of networks, including the public telephone system, with many kinds of protocols; the present invention is not intended to be restricted to any particular client computer/ proxy server connection. For example, the proxy may provide each client with communication software for communicating over a telephone line with the proxy. In another embodiment, the client computer and proxy server can be connected over a local area network, and the proxy can use the operating system hosted by the local area network to communicate with the client computer.

[0011] Once the client establishes a connection with the proxy server, in the preferred embodiment where the proxy server is not itself an ISP, in a step **32** the proxy server **18** accesses the Internet, as the client alias, through an ISP server **15**. Then the proxy server receives through the ISP server graphical user interface (GUI) screens, for display as part of a screen (a window) or as a full screen. The proxy server, in turn, in a step **33** passes the GUI screens to the client. The GUI screens can originate at the ISP server **15**, or at one or another ICP server.

[0012] Then in a step **34**, the client responds to a GUI screen originating at the ICP server **16**; the response is communicated to the proxy server, which in turn translates it into a response originating from the client alias and directs it to the ICP server **16** indicated in the clients response. When the ICP server **16** receives the client response, apparently from the client alias, it responds in turn with another GUI screen. In a step **36**, the proxy server **18** directs the response to the client computer **12**, which displays the GUI screen response for the client.

[0013] With these steps, a client is able to take advantage of any services offered over the Internet, provided the services can be provided completely over the Internet. If, however, the client wishes to order merchandise from the ICP, for the client to remain unknown to the ICP, there must be a "Ship To" address that does not connect the client with the merchandise.

[0014] On the Internet today, an ICP server will sometimes attempt to set a so-called *cookie* in the RAM of a computer hosting a browser accessing the ICP's Web site. The ICP server expects to have the browser return the cookie according to a standard protocol. (See, for example, U.S. Pat. No. 5,774,670 to Montulli, hereby incorporated by reference.) In standing in place of a client, to provide effective access to the Internet, the proxy must allow for the setting and retrieving of cookies but without revealing in a cookie the identity of the client. To do this, the proxy simply passes all incoming cookies to the client but processes the cookies coming from the client (provided by the client's browser based on the Web site the client wants to access), replacing all client identification data with corresponding alias data, when possible. (If the client furnishes a social security number or a credit or charge card number for a credit or charge card issued by other than the proxy or the proxy's agent, there is no corresponding alias information the proxy can use in replacement.)

[0015] Referring now to Fig. 3, the preferred embodiment of the present invention is shown to include having the proxy make payments to an ICP, and accept merchandise from the ICP, on behalf of a client. Payments to the ICP are made based on the purchasing power of the client's alias account Thus, In this embodiment, a client is able to take full advantage of services offered through the Internet, including ordering and receiving merchandise from an ICP.

[0016] As shown in Fig. 3, to take advantage of the present invention, a client and proxy agree on an alias for the client, and the client establishes with the proxy an alias account having some purchasing power. In addition, in the preferred embodiment, the client provides Ship To information so that the proxy can receive merchandise on behalf of the client's alias, and redirect the merchandise to the client's Ship To address. Using an account manager (automated hardware and software system), the proxy then records all of this account information in an account for the client; the client's account information is recorded as a data store accessible by the account manager and also by the proxy server (automated hardware and software system).

[0017] After creating an account with the proxy, a client accesses the Internet through the proxy server, by first connecting to the proxy server as explained above. The proxy server then makes initial access to the Internet, as the client's alias, and receives from the Internet a response to its initial access. This response is a GUI screen, as explained above, enabling searching the Internet or asking for a connection to a particular Internet site. The proxy server provides this GUI screen to the client according to the protocol expected by the client's browser software. In the preferred embodiment, the client's browser is the same browser software the client would use to access the Internet directly, not through the proxy server. In another embodiment of the present invention, the client browser software is not Internet-capable, but specially developed software for receiving GUI screens from the proxy server and communicating back to the proxy server responses to the GUI screens, i.e., actions the client wishes to take on the Internet, and other communications, in general referred to as transaction items.

[0018] Whether the client's browser is a generic Internet-capable browser or special proxy-communication software, in response to the GUI screens communicated by the proxy server, the client uses the browser to express the transaction items for communication to the Internet by the proxy server. Transaction items directed to a particular ICP server result in the ICP providing a response to the alias. The proxy server, as the client alias, receives the ICP response and communicates it to the client browser (along with any cookies).

[0019] In the preferred embodiment, if by communicating transaction items to an ICP, a client has ordered merchandise from the ICP, the proxy server automatically refers to the client's alias account information, to determine whether there is sufficient purchasing power to pay for the merchandise. If not, the proxy server sends the client browser a notice of insufficient purchasing power, and does not communicate the order to the ICP server.

[0020] If the client's purchasing power is sufficient, the proxy server guarantees payment to the ICP by sending a guarantee over the Internet to the ICP server. In turn, the ICP sends the merchandise and a bill to the

proxy in the name of the client's alias, because in this embodiment, the client has the proxy receive all merchandise the client orders, so as to remain anonymous.

[0021] To provide these guarantees, the proxy server must do two things: first, recognize when the client is ordering merchandise anonymously; and second, determine how much the merchandise costs. To recognize when the client is ordering merchandise anonymously, the proxy server, in the preferred embodiment, parses for ordering information the transaction items intended to be communicated to ICP's by the client. (This ordering information is often communicated through cookies.) In parsing for ordering information, the proxy merely examines the transaction items communicated by the client for the alias account code provided by the client in response to a request from an ICP for a credit card number. By using the alias account code, the client signals to the proxy that the client wants the proxy to order and receive merchandise on behalf of the client.

[0022] To determine how much the merchandise costs, in the preferred embodiment, the proxy server examines recent transactions from the client and recent GUI screens from the ICP to whom the alias account code is directed. If the proxy server cannot automatically determine the cost of the merchandise by this examination, the proxy server will query the client for a cost. In another aspect of the present invention, the proxy server simply queries the client for a fee upon discovering that the alias account code has been used. The above may also be used to authorize release of funds from an account.

[0023] In the usual application, where the client computer is connected to the proxy server by a private telephone line, it is unlikely that another party will discover the alias account code issued to the client. In this application, the alias account code is not usually encrypted. For a connection over the Internet, however, the alias account code is more vulnerable, and its encryption is recommended. The present invention, however, is not intended to be in any way limited in this regard.

[0024] In another embodiment, instead of using the alias account code merely as a signal for the proxy to check for funds, the client in fact receives a credit card from the proxy, and the proxy extends credit to the client, up to some pre-determined credit limit. In this embodiment, the proxy usually knows the identity of the client throughout the client-proxy relationship. As noted above, in the preferred embodiment, where the client deposits funds with the proxy, the client can be unknown even to the proxy; the client simply never provides to the proxy actual identification.

[0025] In another aspect of the present invention, the client may choose to order merchandise without using the alias account code, either as an actual credit card number (issued by the proxy) or as a code to the proxy. The client could use an ordinary credit card, revealing the client's identity, or one or another form of digital cash payment. Using some forms of digital cash, and acting through the proxy of the present invention, would keep the client's identity unknown to the ICP.

[0026] In another form of this invention, the proxy would make direct electronic payment from the account it holds and thus provide this service as part of the package.

[0027] While the invention has been particularly shown and described with reference to a preferred embodiment, it would be understood by those skilled in the art that various changes in form and detail may be made therein without departing from the spirit and scope of the invention.

Claims

1. A system for enabling a client, using an alias, to access services over the Internet offered by an Internet content provider (ICP) operating an ICP server, the system comprising:

   a) a browser hosted by a computer operated by the client, for receiving graphical user interface (GUI) screens, and for communicating transactions indicated by the client, the transactions including information that allows the alias to be associated with the transactions; and
   b) a proxy server operated by a proxy, responsive to the transactions, for ensuring that each transaction is under the alias and for communicating the transactions to the ICP over the Internet, and further responsive to GUI screens directed to the alias, for providing the GUI screens to the browser.

2. The system claimed in claim 1, wherein the client uses a key to access service.

3. The system claimed in claim 1, wherein the client receives from the proxy an alias account code associated with an alias account of the client with the proxy, and wherein the client uses the alias account code to purchase merchandise from the ICP when the client wants to remain anonymous; and further wherein the proxy examines transactions communicated by the browser for the alias account code.

4. The system claimed in claim 2, wherein upon finding that the client has used the alias account code in a transaction, the proxy server consults the alias account to determine whether the client has sufficient purchasing power to pay for the merchandise, and further wherein if the client is determined to have sufficient purchasing power to pay for the merchandise, the proxy server communicates a guarantee of payment to the ICP for the merchandise.

5. The system claimed in claim 4 wherein the proxy accepts merchandise ordered by the client under the alias, and provides the merchandise to the client according to instructions received from the client.

6. A method for enabling a client, using an alias, to access services over the Internet offered by an Internet content provider (ICP) operating an ICP server, the method comprising the steps of:

a) having the client use a browser hosted by a computer;
b) having the client receive with the browser graphical user interface (GUI) screens;
c) having the client communicate transactions with the browser in response to the GUI screens;
d) having a proxy operate a proxy server; e) having the proxy server receive the transactions
communicated by the client
f) having the proxy server ensure that each transaction is under the alias and communicate the transactions to the ICP over the Internet to the ICP server;
g) having the proxy server receive GUI screens from the ICP server and communicate to the browser any of the GUI screens directed to the atlas.

7. The method claimed in claim 6 wherein the client receives from the proxy an alias account code for an alias account the client establishes with the proxy, and wherein the client uses the alias account code to purchase merchandise from the ICP when the client wants to remain anonymous; and further wherein the proxy examines transactions communicated by the browser for the alias account code.

8. The method claimed in claim 7, wherein the account code is a key that protects the account from multiple users of the account.

9. The method claimed in claim 7 wherein upon finding that the client has used the alias account code in a transaction, the proxy server consults an account maintained by the proxy for the client to determine whether the client has sufficient purchasing power to pay for the merchandise, and further wherein if the client is determined to have sufficient purchasing power to pay for the merchandise, the proxy server communicates a guarantee of payment to the ICP for the merchandise.

10. The method claimed in claim 9 wherein the proxy accepts merchandise ordered by the client under the alias, and provides the merchandise to the client according to instructions received from the client.

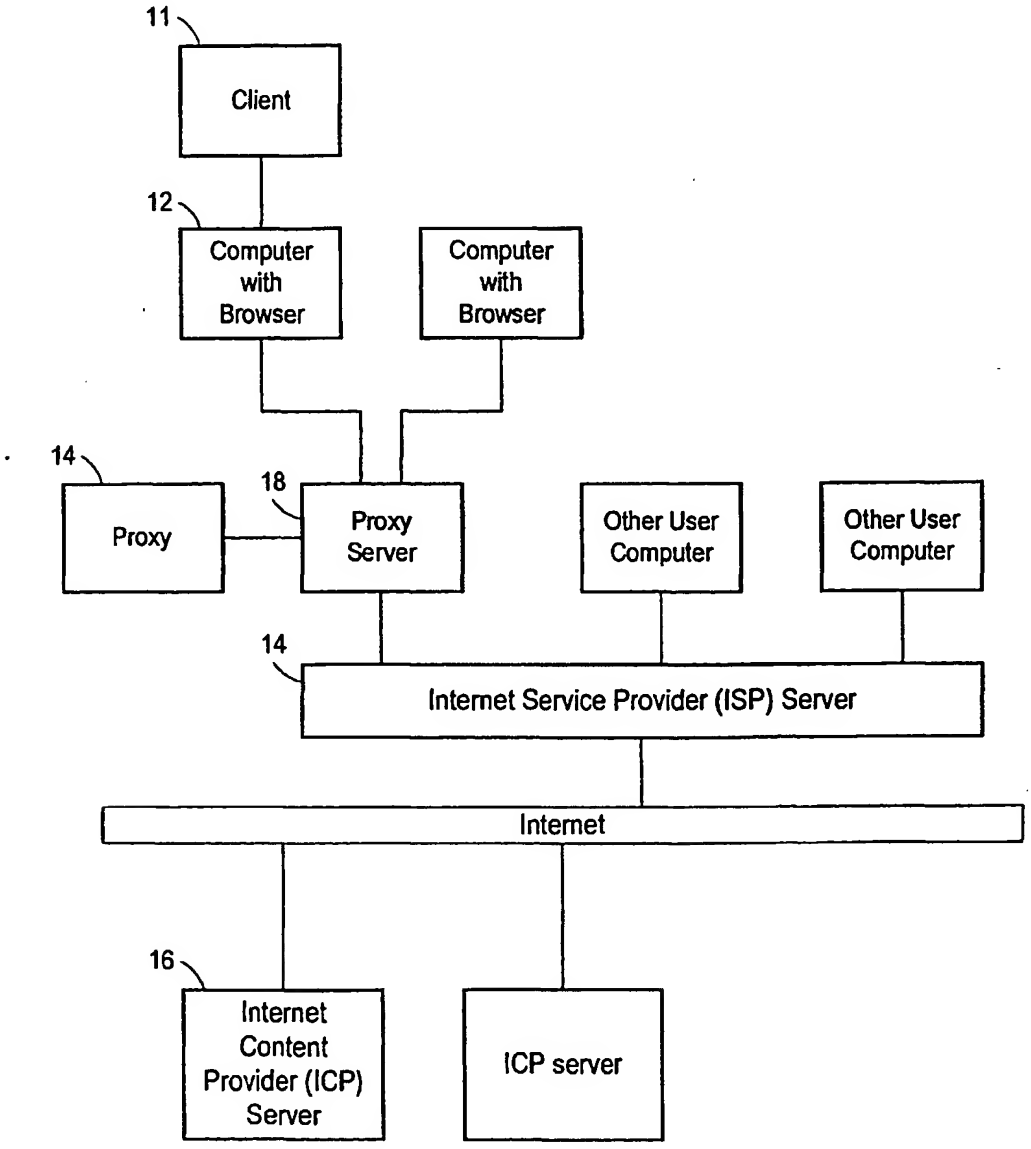
11
Client
12
Computer with Browser
Computer with Browser
14
Proxy
18
Proxy Server
Other User Computer
Other User Computer
14
Internet Service Provider (ISP) Server
Internet
16
Internet Content Provider (ICP) Server
ICP server

Fig. 1

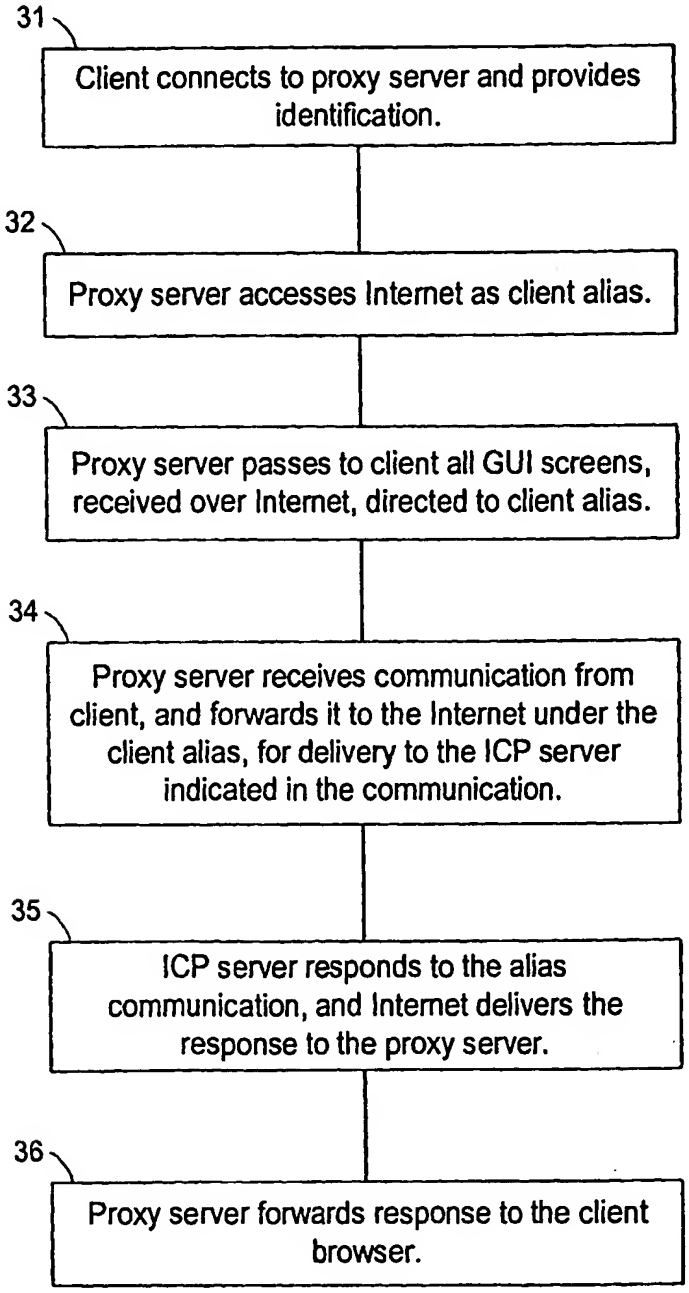
31
Client connects to proxy server and provides identification.
32
Proxy server accesses Internet as client alias.
33
Proxy server passes to client all GUI screens, received over Internet, directed to client alias.
34
Proxy server receives communication from client, and forwards it to the Internet under the client alias, for delivery to the ICP server indicated in the communication.
35
ICP server responds to the alias communication, and Internet delivers the response to the proxy server.
36
Proxy server forwards response to the client browser.

Fig. 2

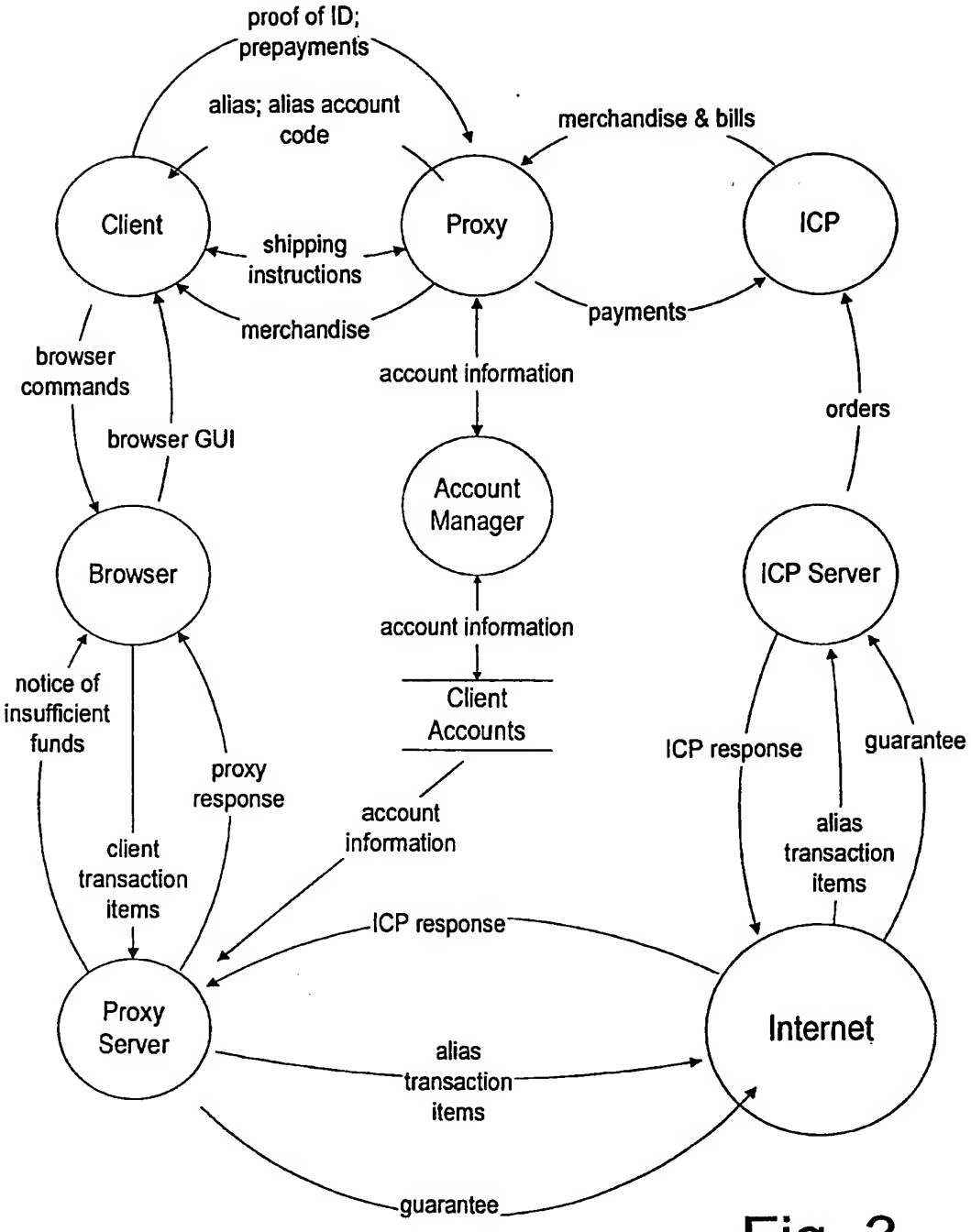
proof of ID;
prepayments
alias; alias account
code
merchandise & bills
Client
Proxy
ICP
shipping
instructions
merchandise
payments
browser
commands
browser GUI
account information
orders
Account
Manager
Browser
ICP Server
account information
notice of
insufficient
funds
Client
Accounts
ICP response
guarantee
proxy
response
account
information
client
transaction
items
alias
transaction
items
ICP response
Proxy
Server
Internet
alias
transaction
items
guarantee

Fig. 3

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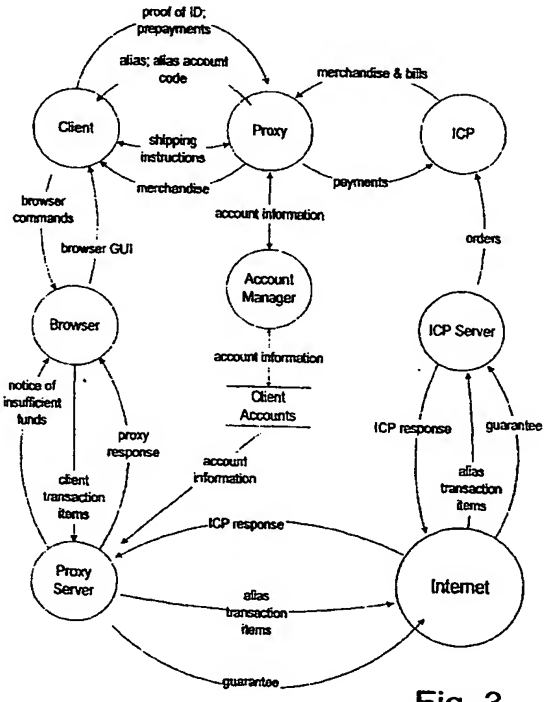

Fig. 3

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European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 00 10 4427

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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Y	* abstract * * figures 1,2 * * page 2, paragraph 3 * * page 3, paragraph 2 * * page 6, paragraph 1 * * page 8, paragraph 6 - page 9, paragraph 2 * * page 11, paragraphs 2,4 * * page 12, paragraph 1 * ---	3-5,7,9, 10	
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	14 February 2003	Riegler, J

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
O : non-written disclosure
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T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
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L : document cited for other reasons

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EUROPEAN SEARCH REPORT

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DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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A	JUSTIN BOYAN: "The Anonymizer - Protecting User Privacy on the Web" ONLINE CITATION, [Online] 1997, pages 1-6, XP002231197 Retrieved from the Internet: <URL:http://citeseer.nj.nec.com/cache/papers/cs/78/http:zSzzSzwww.cs.cmu.eduzSz~jabzSzpubszSzboyan.anonymizer.pdf/the-anonymizer.pdf> [retrieved on 2003-02-14] * page 3-4, paragraph TECHNICAL.ISSUES * -----	1,2,6,8	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)

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Place of search	Date of completion of the search	Examiner
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CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 00 10 4427

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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14-02-2003

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